"Things" about Honey

As I listen to people talk about honey, particularly when they are trying to sell some of their crop, I am appalled at how little people seem to know about their product. Hence, I thought you should know the answers to some of the questions that often are asked, as well as showing your interest in helping a customer by telling them things they should know.

1) HOW IS HONEY MADE, AND WHAT DOES THE BEEKEEPER HAVE TO DO WITH IT?

Unless you are a chemist, you think that sugar is that white powder in the sugar bowl on your table. You are right, since table sugar is chemically the di-saccharide, SUCROSE. However, there are many, many different sugars, some very complex poly-saccharides, and others are simple mono-saccharide like glucose and fructose; and strangely, some are sweeter than others. The nectar of a flower from a plant, tree, or shrub is primarily 80%-90% water and the di-saccharide chemical, sucrose. A honey bee's stomach emits an enzyme, invertase, that chemically breaks down the di-saccharide into two different mono-saccharides, GLUCOSE and FRUCTOSE. After the worker bee adds the microscopic amount of invertase to the nectar and evaporates the water concentration to only about 16-18% water, we now have HONEY! Hence, honey consists of primarily two simple sugars, glucose and fructose dissolved in about 16-18% water. Just like you might keep a food like orange juice in a sealed bottle, the bee keeps the honey in a sealed wax comb that they have made. The ONLY thing that a beekeeper does to the honey is remove the combs of honey from the bees, cut off the wax cappings of the comb, drain (extract) the honey from the comb, filter out any particles of wax and bottle it - READY FOR YOU TO EAT! When I mention the enzyme,invertase, some people get a little squeamish, but you should not; because your own body does exactly the same thing with table sugar, sucrose. Your pancreas manufactures invertase, and when you eat sugar, like in tea or candy, the invertase breaks that sucrose down into glucose and fructose which is sometimes called "blood sugar" and is found in your blood. I'll bet you did know how much we are like bees in handling of sugar.

Every beekeeper should be able to explain "How honey is made"!

2) HOW MUCH DOES HONEY WEIGH?

Since the density of honey varies slightly with the percentage water that is in the honey, a "specific gravity" figure cannot be given. However, for the most part, honey is half again heavier than water. Hence, a 5 gallon can of honey contains 60 pounds of honey, but it would only hold about 40 pounds of water. The 1 pound "queenline" honey jar that we are familiar with holds 16 ounces of honey, but only about 11 ounces of water. Old Timers used to sell honey in pint or quart Mason Jars (same as "moonshine" whiskey), but a pint Mason jar contains about 24 ounces (1 1/2 pounds) of honey which makes pricing difficult. It is always best to bottle honey in 1/2 lb., 1 lb., 2 lb., or 5 lb. honey jars, just like we sell eggs by the dozen, and never just 10 or 15 eggs.

3) WHY DOES HONEY COME IN DIFFERENT COLORS?

Although the nectar of two different flowers of a plant like clover or buckwheat essentially consist of maybe 85% water and 14% sucrose (sugar), that other 1% or less has all kinds of many different things in it, like minerals in tiny quantities. Dependent on what these different minerals are as well as how much of them are present, such as sodium, calcium, iron, or copper, etc. will determine the color of the honey. For example, clover honey is a light amber color, whereas buckwheat honey coming from a tiny white flower is almost pitch black in color, like old axle grease. Although not totally true, generally one can say that "THE DARKER THE COLOR, THE STRONGER THE FLAVOR". I don't want to start any arguments, but most beekeepers prefer the darker honeys for their own eating and ignore the light colored honeys as "sweet like sugar syrup, but little flavor". My favorite is Tulip Poplar, and it has a pronounced reddish caste to its color in the bright sunlight.

Some foolish people have said the "dark honey is OLD honey". They are WRONG!

4) WHY DOES HONEY CRYSTALLIZE, GRANULATE, OR TURN TO SUGAR? HAS IT GONE BAD?

Almost all honey will crystallize if left long enough with the exception of sage honey or tupelo honey. Honey is composed of a mixture of glucose and fructose, and the relative percentage of each determines whether it crystallizes slowly or rapidly. In nature, glucose is normally found as a solid, whereas fructose is normally found as a liquid. Hence, when a honey has a relatively high relationship of glucose to fructose, the honey crystallizes quickly, like goldenrod honey or alfalfa honey. Oppositely, honey that is lower in glucose compared to fructose tend to be quite slow to crystallize, like tulip poplar or locust honey. Based on White et al in 1962, the list below gives the relative speed of crystallization in descending order of various honeys found in Maryland:

CROP	**CRYSTALLIZATION TIME**	**COLOR**
Tulip Poplar	Very slow	Dark Amber with reddish caste
Locust	Very slow	White to Light Amber
Holly	Very slow	Light Amber to Amber
Basswood	Medium speed	Light Amber
Clover	Medium speed	White to Light Amber
Buckwheat	Medium speed	Very Dark Amber to black
Goldenrod	Rapid	Amber
Alfalfa	Rapid	Amber
Wildflower	Anybody's Guess	Any color of the rainbow

(this is the honey you get when you mix nectars from different floral sources)

Has water gone "bad" when it freezes to ice? Of course not. Just warm the ice, and it turns back to water. The same is true for crystallized honey, just warm it SLOWLY in a double boiler to no more than 120º and you convert those solid crystals to liquid honey again. Don't use a microwave oven, because you might burn the honey.

5) WHERE IS THE BEST PLACE TO KEEP HONEY?

Well, the WORST place is a temperature near 57º, because that is the temperature that Dr. Dyce of Cornell University found was the absolutely best temperature to make honey crystallize the fastest. Hence, probably the worst place around a home is in the basement, garage, or outside shed. The best place to keep honey that is being used often is in a sealed bear or jar sitting on a sunny table or on a sunny shelf. If you want to keep honey for several weeks or months, put it in your freezer and keep it near 0º. NEVER PUT HONEY IN YOUR REFRIGERATOR! Make sure that you tell your customer's to never put honey in a refrigerator, but a freezer is fine!

6) HOW DO YOU EAT COMB HONEY?

At my old age, that is such a silly question, but people under about 50 years old ask it all the time, or look at it as if it had "bugs" in it. During the Depression days of 1930-36 when many were unemployed, if you had a 60 hour/week job, your pay was $5/week, a quart of milk delivered to you home was just 8¢, buss fare all over Washington DC was 3¢, and double feature movies were 15¢. Honey producers could not afford to buy jars or an extractor, so almost all honey was sold as 4"x4" wooden section comb honey for 25¢ each if you were lucky. You laid the section flat on a dish, dipped into the wax comb with a fork or spoon, and spread it on hot rolls, cornbread, toast, blueberry muffins, or best of all - JUST RIGHT IN YOUR MOUTH. The honey that dripped into the dish, you used to sweeten your tea or lemonade or the sweetener to make fruitcake. Most everybody swallowed the wax, and because it totally inert, you did not have to spend money for some fancy cereal to "put bulk in your diet". Chewing gum was 5¢ a package, so we used to call comb honey "poor man's chewing gum". I still love to eat comb honey, but my dentures don't like it, because the wax sticks to false teeth. You "ain't lived" until you just take a big bite of comb honey, swirl the delectable honey around in your mouth, chew on the wax for the next half hour, and then swallow. WOW! I also love to eat raw oysters - after all, Maryland is Chesapeake Bay country, the "the land of pleasant living"! Now I sell comb honey for $5.00/pound or a 3 ounce sample for $8.00/pound. How much are you selling your honey for? Seeing a comb honey section of nice clean white (not dirty yellow) wax reminds me of the prom queen dressed in a white satin evening gown. Yum Yum!

7) DOES HONEY HAVE ANY MEDICAL OR HEALTH USES?

You gotta be kidding! Didn't your grandmother treat your sore throat with hot tea, lemon, and honey? Mine did! Now, we have been taught to rely on antibiotics to cure everything from too much flatulence to a hang nail. For centuries, in the days before guns, when the sword was a major weapon, honey was known for its healing properties and effective antimicrobial agent, and hence was used as a dressing for wounds and burns. Germs have difficulty living in antimicrobial agents, and since honey has relatively high acid content, pH about 4.0, and even the presence of a low concentration of hydrogen peroxide, a dressing of honey promotes healing, helps prevent scarring, and keeps a wound from adhering to a bandage. No sense buying Neosporin when there is plenty of honey around. DOES EATING LOCAL HONEY HELP ALLERGY (HAY FEVER) SUFFERERS? Yes and no. If you are allergic to the pollen of some flower visited by honey bees in their searches for pollen or nectar, eating of the local honey from that area may desensitize your immune system and hence, work like a vaccine. But if one gets hay fever from some floral source that honey bees don't visit, eating all the honey in the world will have no effect on that allergy. Recently, many of us saw on television the Olympic Games in Sydney, Australia with those sport

people "burning the candle at both ends" in energy consumption. It is amazing how many of these athletes swallowed a teaspoon of honey just before their event to get a sudden boost of energy, and many of the marathon racers by foot or on bicycles added a teaspoon of honey to their water bottle, not because it tasted good, but to give them "instant energy". Just "plain old sugar" won't so that, because the body has to break this sucrose down into the simple sugars glucose and fructose (blood sugars) before it will provide energy to a human.

8) OTHER THAN "JUST EATING IT", WHERE ELSE IS HONEY FOUND?

It is used as a topping on biscuits, muffins, rolls, cornbread, and toast. It is a sweetner in tea, barbecue sauces, and ham glazes. It is an ingredient when used in honey beers, honey breads, honey cereals, honey mustards, honey salad dressings, honey cough syrup, and honey shampoo. Half of all the honey sold in the U. S. is used in manufactured products!

9) WHAT IS "CREAMED" HONEY OR HONEY "SPREAD"?

First, let my say it is NOT honey butter or 'spun" honey. Honey butter is honey mixed with butter and "spun" honey is honey mixed with air and looks like a cobweb on a stick. As previously said, all honeys will eventually crystallize except tupelo or sage honey; but when they crystallize naturally, the crystals are large and coarse, and feels like sand in your mouth. A beekeeper selects some of these large coarse crystals of a honey he likes, and GRINDS them with a pestle in a mortar until they are a tiny, fine crystal almost like talcum powder. This is used as the seed to make a jar of selected honey crystallize into a "cream" or "spread" of honey, whose crystals are tiny and not sharp. About 2 ounces of this ground "seed" honey is added to about to about 14 ounces of the honey you want to make into honey spread, placed in a controlled temperature of 57¡ and kept there about 10 days, and VOILA, you have a pound of honey spread. It is 100% honey - nothing has been added, nor anything removed! Honey spread MUST be kept at a temperature of less than about 70¡ or it will go right back to liquid honey. Now if you want to get real fancy, you can flavor this honey spread with cinnamon, strawberries or other tasty things. It may come as quite a surprise to you, but outside the U.S., particularly in Europe, the great majority of honey sold is honey spread rather than liquid honey. I love it, because it doesn't drip and spill on your clothes, and it is so spreadable with a knife like peanut butter, and I sell it for $5.00 per pound.

10) HOW DOES ONE GET ALL CLOVER HONEY, OR ALL BUCKWHEAT HONEY, OR ALL TULIP POPLAR HONEY?

First and most important, different nectar sources bloom at different times, e.g., Tulip poplar blooms in May, clover blooms in June, and buckwheat blooms in August. In advance, you find a farmer who plants these crops and ask his permission for you to set your beehives in his fields during the bloom. Generally, he is delighted to get the pollination of his crop done free by your bees. Sometimes, two different floral sources might bloom at the same time. Then you have to be satisfied with the one with giving the nectar with the highest sugar content, because that is where the bees are going to select as long as the bloom produces.